

- a) adding a THF solution of .2 of Figure 7 to a suspension of PYBOP in THF followed by Et<sub>3</sub>N,
- b) adding an amine 1 of Figure 7 and Et<sub>3</sub>N to the solution obtained in step (a),
- c) adding a catalytic amount to the solution obtained in step (b) of pTsOH and refluxing the solution,
- d) cooling the solution obtained after step (c) at ambient temperature and adding a sodium bicarbonate solution,
- e) extracting the product obtained after step (d) with ethyl acetate and drying and concentrating the product with ethyl acetate,
- f) purifying the residue obtained after step (e) by column chromatography on silica gel,
- g) removing traces of water by washing the product of step (f) with trifluoroacetic anhydride,
- h) reacting said persulphurated derivative obtained from step (g) with a suitable labelled or non-labelled perfluorinating agent and a suitable oxidant resulting in a compound having a high yield of fluor atom incorporation,
- i) deprotecting the nitrogen function, resulting in a perfluoroalkyl amine derivative, and
- j) coupling the perfluoroalkyl amine derivative obtained in step (i) with an activated form of 2-(2-nitro-imidazol-1-yl) acetic acid, resulting in the [<sup>18</sup>F]-labelled or non-labelled perfluorinated-nitroaromatic compound.

B3  
9. (Twice Amended) A [<sup>18</sup>F]-labeled compound obtainable by a method according to claim 35.

B4  
21. (Twice Amended) Use of compound according to claim 31 as bioactive compound.

B5  
26. (Twice Amended) A method for the detection of tissue hypoxia in a patient comprising:

- introducing an [<sup>18</sup>F] labeled nitroimidazole compound of claim 31 into said patient,
- imaging tissue hypoxia in said patient, and
- quantifying tissue hypoxia in said patient.

B6  
28. (Twice Amended) A method for the detection of tissue hypoxia in a tissue comprising:

- introducing an [<sup>18</sup>F] labeled nitroimidazole compound of claim 31 into a patient,
- removing a tissue sample from said patient, and
- analysing the emission in said tissue sample by autoradiography.

29. (Twice Amended) A method for the detection of an [<sup>18</sup>F] labeled bioactive compound in a patient comprising:

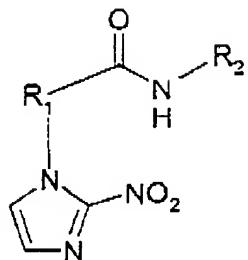
- introducing an [<sup>18</sup>F] labeled bioactive compound according to claim 31 into said patient,
- imaging the presence of said [<sup>18</sup>F] labeled bioactive compound in said patient, and
- optionally, quantifying the presence of said [<sup>18</sup>F] labeled bioactive compound in said patient.

30. (Twice Amended) A method for the detection of [<sup>18</sup>F] labeled bioactive compound in a tissue comprising:

- introducing an [<sup>18</sup>F] labeled bioactive compound of claim 31 into a patient,
- taking a tissue sample from said patient, and
- analysing the emission in said tissue sample by autoradiography.

Please add new claims 31-35 as follows:

B7  
--31. (New) A [<sup>18</sup>F]-labelled perfluorinated-nitroaromatic compound having the formula:



wherein R<sub>1</sub> is CH<sub>2</sub> and R<sub>2</sub> is an alkyl group having up to about 6 halogen atoms, wherein said alkyl group has the formula CHX<sub>2</sub>CY<sub>3</sub> where X is halogen or hydrogen and Y is fluorine.

*B7  
B8  
Cont'd*  
32. (New) A compound according to claim 31, having specific radioactivity of the compound comprised between 1 and 30 Ci/mmol, preferably between 1 and 20 Ci/mmol, preferably between 1 and 10 Ci/mmol

33. (New) A compound according to claim 31, having the formula 2-(2-nitro-1H-imidazol-1-yl)-N-(3,3,3-trifluoropropyl) acetamide ([<sup>18</sup>F]-EF3).

34. (New) A compound according to claim 32, having the formula 2(2-nitro-1H-imidazol-1-yl)-N-2,2,3,3-pentafluoropropyl) acetamide ([<sup>18</sup>F]-EF5).

35. (New) A method for the synthesis of a compound according to claim 31, comprising the step of coupling 2-(2-nitro-imidazol-1-yl) acetic acid with a [<sup>18</sup>F]-labelled perfluoroalkyl amine derivative. *p*